SIEMENS

*** SPARE PART*** SIMATIC S7-300, CPU 312 CPU WITH MPI
INTERFACE, INTEGRATED 24 V DC POWER SUPPLY 32 KBYTE
WORKING MEMORY, MICRO MEMORY CARD NECESSARY

Figure similar

General information

Hardware product version	01
Firmware version	V2.6
Engineering with	
• Programming package	STEP 7 V5.2 + SP1 or higher with HW update

Supply voltage

Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	2 A min.

Input current

Current consumption (rated value)	0.6 A
Current consumption (in no-load operation), typ.	60 mA
Inrush current, typ.	2.5 A
I²t	0.5 A²·s

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Power loss	
Power loss, typ.	2.5 W

Memory	
Work memory	
• integrated	32 kbyte; For program and data
• expandable	No
Load memory	
• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	4 Mbyte
• Data management on MMC (after last programming), min.	10 y
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data

CPU processing times	
for bit operations, typ.	0.2 µs
for word operations, typ.	0.4 µs
for fixed point arithmetic, typ.	5 µs
for floating point arithmetic, typ.	6 µs

CPU-blocks	
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
• Number, max.	511; Number range: 1 to 511
• Size, max.	16 kbyte
FB	
• Number, max.	1 024; Number range: 0 to 2047
• Size, max.	16 kbyte
FC	
• Number, max.	1 024; Number range: 0 to 2047
• Size, max.	16 kbyte
OB	
• Size, max.	16 kbyte
• Number of free cycle OBs	1; OB 1
• Number of time alarm OBs	1; OB 10
• Number of delay alarm OBs	1; OB 20
• Number of cyclic interrupt OBs	1; OB 35
• Number of process alarm OBs	1; OB 40
• Number of startup OBs	1; OB 100
• Number of asynchronous error OBs	4; OB 80, 82, 85, 87
• Number of synchronous error OBs	2; OB 121, 122

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Nesting depth	
• per priority class	8
• additional within an error OB	4

Counters, timers and their retentivity

S7 counter
• Number	128

Retentivity
— adjustable	Yes
— lower limit	0
— upper limit	127
— preset	8

Counting range
— can be set	Yes
— lower limit	0
— upper limit	999

IEC counter
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)

S7 times
• Number	128

Retentivity
— adjustable	Yes
— lower limit	0
— upper limit	127
— preset	No retentivity

Time range
— lower limit	10 ms
— upper limit	9 990 s

IEC timer
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)

Data areas and their retentivity
retentive data area in total	All (incl. memory bits, times, counters)

Flag
• Number, max.	128 byte
• Retentivity available	Yes; MB 0 to MB 127
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte

Data blocks

• Number, max.	511; Number range: 1 to 511
• Size, max.	16 kbyte
• Retentivity adjustable	Yes; via non-retain property on DB
• Retentivity preset	Yes

Local data	
• per priority class, max.	256 byte

Address area

I/O address area	
• Inputs	1 kbyte
• Outputs	1 kbyte

Process image	
• Inputs	128 byte
• Outputs	128 byte

Digital channels	
• Inputs	256
— of which central	256
• Outputs	256
— of which central	256

Analog channels	
• Inputs	64
— of which central	64
• Outputs	64
— of which central	64

Hardware configuration

Number of expansion units, max.	0

Number of DP masters	
• integrated	0
• via CP	4

Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	4

Rack	
• Racks, max.	1
• Modules per rack, max.	8

Time of day

Clock	
• Software clock	Yes
• retentive and synchronizable	No
• Deviation per day, max.	15 s

Operating hours counter	

• Number	1
• Number/Number range	0
• Range of values	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour
• retentive	Yes; Must be restarted at each restart

Clock synchronization	
• supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	No
• to DP, slave	No
• in AS, master	Yes
• in AS, slave	No
• on Ethernet via NTP	No

Digital inputs	
integrated channels (DI)	0

Digital outputs	
integrated channels (DO)	0

Analog inputs	
integrated channels (AI)	0

Analog outputs	
integrated channels (AO)	0

Interfaces	
Number of industrial Ethernet interfaces	0
Number of RS 485 interfaces	1
Number of RS 422 interfaces	0

1. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA

Functionality	
• MPI	Yes
• PROFIBUS DP master	No
• PROFIBUS DP slave	No
• Point-to-point connection	No

MPI	
• Number of connections	6
• Transmission rate, max.	187.5 kbit/s

Services	

— PG/OP communication	Yes
— Routing	No
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes
Communication functions	
PG/OP communication	Yes
Global data communication	
• supported	Yes
• Number of GD loops, max.	4
• Number of GD packets, max.	4
• Number of GD packets, transmitter, max.	4
• Number of GD packets, receiver, max.	4
• Size of GD packets, max.	22 byte
• Size of GD packet (of which consistent), max.	22 byte
S7 basic communication	
• supported	Yes
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes; Via CP and loadable FB
• User data per job, max.	180 byte; With PUT/GET
• User data per job (of which consistent), max.	64 byte
S5 compatible communication	
• supported	Yes; via CP and loadable FC
Number of connections	
• overall	6
• usable for PG communication	5
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	5
• usable for OP communication	5
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	5
• usable for S7 basic communication	2

— reserved for S7 basic communication	0
— adjustable for S7 basic communication, min.	0
— adjustable for S7 basic communication, max.	2

S7 message functions

Number of login stations for message functions, max.	6; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	20

Test commissioning functions

Status block	Yes
Single step	Yes
Number of breakpoints	2

Status/control

• Status/control variable	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30
— of which status variables, max.	30
— of which control variables, max.	14

Forcing

• Forcing	Yes
• Forcing, variables	Inputs, outputs
• Number of variables, max.	10

Diagnostic buffer

• present	Yes
• Number of entries, max.	100
— adjustable	No

Configuration

Configuration software

• STEP 7	Yes; V5.2 SP1 or higher with HW update

Programming

• Command set	see instruction list
• Nesting levels	8
• System functions (SFC)	see instruction list
• System function blocks (SFB)	see instruction list

Programming language

— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes

— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
• User program protection/password protection	Yes

Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm

Weights	
Weight, approx.	270 g
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